Data & Accountability Department

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Impact Evaluation

DISTRICT IMPROVEMENT OUTCOMES: 2010-11

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In 2010-11, Wake County Public School System (WCPSS) was in district-wide improvement as a result of failing to meet Adequate Yearly Progress (AYP) in mathematics at the district level for the second consecutive year. Under the No Child Left Behind Act of 2001 (NCLB), the district was required to develop a Local Educational Agency (LEA) Plan for Improvement that incorporated scientifically-based research strategies and to offer training appropriate to address the subgroups that did not make AYP. District Improvement requires 10% of Title I funds be set aside for professional development.

WCPSS has implemented several approaches focused on providing greater training support to the subject areas and student groups that need it most.

- Sheltered Instruction Observation Protocol (SIOP®), a research-based approach aimed at strengthening students' academic language and student involvement, is one of the strategies which have been in place within WCPSS since 2007-08.
- Secondary Mathematics and Secondary Literacy efforts are more recent additions to District Improvement training efforts.

This report examines overall student outcomes related to these three strategies in 2010-11 as well as overall teacher outcomes and longitudinal results for schools targeted for three consecutive years of SIOP® training and support compared to matched schools who were not involved. A report on the implementation of WCPSS' District Improvement efforts in 2010-11 was released recently and should be considered a companion document in understanding the results found (Bulgakov-Cooke & Baenen, 2011).

Major Findings

Study Design
Two levels of analysis were conducted to assess student outcomes: 1) overall results for SIOP®, Secondary Literacy, and Secondary Mathematics compared to WCPSS; and 2) an examination of SIOP® schools receiving three years of support and matched schools.

School Characteristics
In 2010-11, six elementary schools and three middle schools received additional training and support for the implementation of SIOP®. Twelve schools were supported by the Secondary Literacy initiative and 19 by Secondary Mathematics.

SIOP®
SIOP® schools had a greater increase in students reaching growth targets than in the district overall. Increases in reading and mathematics proficiency at SIOP® elementary schools and reading at SIOP® middle schools were similar or slightly higher than for WCPSS. Overall mathematics results were not positive for SIOP® middle schools; however, matched school analysis by subject and school level found targeted student subgroups (i.e., Hispanic/Latino and Black/African American , Limited English Proficient, and economically disadvantaged) did benefit from attending SIOP® targeted schools.

Secondary Literacy
The percentage of students meeting growth targets increased more than the district. The increase in students proficient in reading at schools supported by Secondary Literacy was similar to WCPSS.

Secondary Mathematics
Growth was lower for participating schools than for WCPSS overall. The increase in students proficient in mathematics at schools supported by Secondary Mathematics was similar to WCPSS.

Recommendations
SIOP efforts should continue in schools with high concentrations of student subgroups not making AYP, and other District Improvement components should increase this focus. Secondary Literacy and Secondary Mathematics initiatives should strengthen implementation levels and consistency, which in turn should increase the likelihood of stronger achievement outcomes in their second year.

WAKE COUNTY PUBLIC SCHOOL SYSTEM

The author acknowledges the contributions made by WCPSS' Federal Programs and Grants, Academics, and Data and Accountability staff to the data collection and analysis presented in this report.

STUDY DESIGN

This report examined 2010-11 overall outcomes related to the SIOP®, Secondary Literacy, and Secondary Mathematics efforts implemented within WCPSS' District Improvement Plan. The objective of the District Improvement Plan, through the implementation of these initiatives, was to increase reading and mathematics achievement for the targeted NCLB subgroups in elementary, middle, and high schools. The ultimate goal is for WCPSS to meet AYP targets for two consecutive years and exit district improvement. The key questions of interest in this evaluation were to assess whether District Improvement interventions are helping WCPSS make progress towards this long-term goal.

- Have schools targeted for SIOP®, Secondary Literacy, and Secondary Mathematics been effective in terms of outcomes for students (compared to the district overall)?
- Did SIOP® targeted schools and teachers with the highest implementation ratings show greater student growth?
- How did the students in SIOP® targeted schools progress compared to non-targeted (matched schools)?
- How did the students in SIOP® targeted schools progress by NCLB subgroups?

In order to address these questions two levels of analysis were conducted:

1. Overall student results on End of Grade/End of Course tests (EOG/EOC) for SIOP®, Secondary Literacy, and Secondary Mathematics compared to WCPSS; and
2. An examination of student outcomes on EOG for SIOP® schools receiving three years of support and matched schools constructed from non-targeted schools.

In addition to considering overall proficiency, growth, and AYP results based on state EOG tests for the schools receiving extra support implementing SIOP®, Secondary Literacy, and Secondary Mathematics, a three-year change in the percentage of students meeting growth was calculated. The three-year change was calculated as the difference between the percentage of students meeting growth in 2008-09 and that of 2010-11.[1] These values were calculated for:

- District-wide elementary schools
- Selected SIOP® elementary schools within the district
- District-wide middle schools
- Selected SIOP® middle schools within the district

For each of these four groups of schools, the three-year change was also calculated for the following subgroups of students: Black/African American, Hispanic/Latino, White, economically

[1] For each year, the percentage of students meeting growth was calculated as the total number of students meeting growth divided by the total number of students considered to be available for growth measurement by virtue of having a previous year's growth value and being enrolled at their school for the requisite number of school days.

disadvantaged (ED), limited English proficient (LEP) students, and students with disabilities (SWD). In a few cases certain subgroups were too small (i.e., fewer than 15 students) to have their growth data reported in the disaggregated growth spreadsheets. In such cases, the total values used for the calculations were produced without the unreported subgroup.

Comparisons to matched schools were conducted to improve the strength of the evaluation by including only schools that had received three years of additional support implementing SIOP® and schools matched on achievement and demographic characteristics (the matched process is described in the next section). These analyses represent the most precise test of SIOP® effectiveness for students' growth.

SCHOOL CHARACTERISTICS

The characteristics of schools targeted for additional support in 2010-11 under the District Improvement Plan are presented first, followed by the schools which received three years of additional support implementing SIOP® and matched schools.

District Improvement Targeted Schools

The overall results of three major District Improvement components—SIOP®, Secondary Literacy, and Secondary Mathematics—were compared to WCPSS achievement results overall. The schools that received targeted support with each component in 2010-11 were examined to determine the effectiveness of each initiative.

The first portion of the study focused on the impact of 2010-11 services among schools receiving additional support in implementing SIOP®, the Secondary Literacy Initiative, and the Secondary Mathematics Initiative.

- Six elementary schools—Brentwood, Durant Road, Fox Road, Hodge Road, Timber Drive, and Wilburn—and three middle schools—East Wake, West Millbrook, and Zebulon—received additional training and support with the implementation of SIOP®.
- The Secondary Literacy Team provided support to English/Language Arts teachers at 12 schools targeted to receive support based on achievement needs.
- The Secondary Mathematics Team provided additional support to grade 6-8 mathematics teachers and Algebra I teachers at 19 schools with the goal of helping support their students who performed below grade level and who did not meet AYP targets.

SIOP® Schools Receiving Support for Three Years and Matched Schools

The second portion of the study was focused on SIOP® schools receiving support for three years and matched schools. Although nine schools received additional training and support for the implementation of SIOP® in 2010-11, for Hodge Road Elementary, 2010-11 represented the second year of receiving additional support. The remainder of schools were in their third year of receiving support; therefore, to be consistent and to examine the full impact of implementation, Hodge Road was excluded from the matched school analysis.

The eight SIOP® schools for which 2010-11 was their third year receiving support were the focus of the second part of this study: five elementary schools—Brentwood, Durant Road, Fox Road, Timber Drive, and Wilburn—and three middle schools—East Wake, West Millbrook, and Zebulon. Cluster analysis was conducted to select five matched elementary schools and three middle schools. The analysis was run using the centroid method:[2] four variables were included in the model (2009-10 performance composite, 2010-11 overall risk score, 2010-11 days in membership on the 20th day of school, and school level). The overall risk score is a school level score calculated based on the percentage of students at each school with academic risk factors, such as ED status, LEP status, and SWD.

Table 1 displays the eight schools for which 2010-11 was their third year receiving support implementing SIOP® and their matched schools. Schools receiving support with implementing but with less than three years of support and schools that had received school-wide training on SIOP® were excluded from the analysis and thus not utilized as possible matches.

Table 1
Three Year SIOP® Schools and Matched Schools

SIOP® School	Matched School
Elementary Schools	
Brentwood	Barwell
Fox Road	Millbrook
Durant Road	Willow Springs
Timber Drive	Forestville Road
Wilburn	Lynn Road
Middle Schools	
East Wake	East Millbrook
West Millbrook	Fuquay-Varina
Zebulon	Carroll

Data Source: Cluster analysis utilizing the centroid method conducted using the 2010-11 school data file from WCPSS' Growth and Planning Department.

[2] "*Centroid method*. The cluster to be merged is the one with the smallest sum of distances between cluster means (centroids) for all variables. The centroid method also weights for differences in cluster size" (Garson, 2010).

The next section examines the characteristics of the students included within this evaluation and is organized to reflect the two levels of analysis: 1) the characteristics of students enrolled in schools receiving support implementing SIOP®, Secondary Literacy, and Secondary Mathematics components of the District Improvement Plan compared to WCPSS; and 2) the characteristics of the students enrolled in the SIOP® schools receiving three years of support and matched schools.

STUDENT CHARACTERISTICS

Among SIOP® schools, ED, LEP, Black/African American, and Hispanic/Latino student subgroups were disproportionately represented.

District Improvement Targeted Schools

As Table 2 shows, the nine schools which received additional support implementing SIOP® in 2010-11 had some subgroups of students who were disproportionately represented. The overrepresentation of these subgroups, which failed to make AYP standards, was done intentionally.[3]

- ED students represented nearly two-thirds (62.1%) of elementary school students and more than half (53.6%) of middle school students attending SIOP® schools compared to just over a third in the district (36.9% and 35.8% respectively).

- LEP students represented 21.5% of elementary students attending SIOP® schools compared to 11.8% in the district and 9.0% of middle school students compared to 5.7% of the district.

- Black/African American elementary students represented 37.2% versus 23.1% of WCPSS students and 34.6% middle school students compared to 26.6% in the district.

- Hispanic/Latino elementary students represented 28.8% versus 16.5% of WCPSS students and 21.2% of middle school students compared to 13.3% in the district.

[3] 2010-11 targeted schools were selected based on 2009-10 data. In 2009-10, WCPSS failed to meet AYP in mathematics for Black/African American students and SWD students at the high school level, Hispanic/Latino students at the middle school level, and Black/African American and ED students at the elementary school level.

Table 2
Characteristics of Students Attending SIOP® Schools, 2010-11

	Students Attending SIOP® Elementary Schools		WCPSS Elementary Students		Students Attending SIOP® Middle Schools		WCPSS Middle Students	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
ED	2,756	62.1%	25,601	36.9%	1,335	53.6%	11,717	35.8%
SWD	531	12.0%	7,968	11.5%	425	17.1%	4,682	14.3%
LEP	953	21.5%	8,159	11.8%	224	9.0%	1,880	5.7%
Male	2,277	51.3%	35,315	51.0%	1,303	52.3%	16,595	50.7%
Female	2,161	48.7%	33,993	49.0%	1,189	47.7%	16,115	49.3%
American Indian	17	0.4%	253	0.4%	19	0.8%	154	0.5%
Asian	133	3.0%	4,553	6.6%	46	1.8%	1,984	6.1%
Black/African Am.	1,650	37.2%	16,027	23.1%	863	34.6%	8,715	26.6%
Hispanic/Latino	1,277	28.8%	11,468	16.5%	528	21.2%	4,362	13.3%
Multiracial	197	4.4%	3,093	4.5%	95	3.8%	1,437	4.4%
White	1,164	26.2%	33,914	48.9%	941	37.8%	16,058	49.1%
Total	**4,438**	**100%**	**69,308**	**100%**	**2,492**	**100%**	**32,710**	**100%**

Note: Students will appear in more than one category: race and gender, ED, SWD, and/or LEP.
Data Source: 2010-11 WCPSS End-of-Year Elementary and Middle School Student Rosters and WCPSS Demographics: School Statistics and Maps, 2010-11 at http://www.wcpss.net/demographics/reports/book09a.pdf

As Table 3 shows, the schools which received support through the Secondary Literacy and Secondary Mathematics Initiatives in 2010-11 were similar demographically to elementary and middle (i.e. secondary) students in WCPSS overall. The only two subgroups over represented were ED students and Black/African American students within targeted schools.

Table 3
Characteristics of Students Attending Schools Targeted for Secondary Literacy and/or Secondary Mathematics, 2010-11

	Students Attending Secondary Literacy Schools		Students Attending Secondary Mathematics Schools		WCPSS Secondary Students	
	Number	Percent	Number	Percent	Number	Percent
ED	5,182	39.6%	8,873	32.5%	23,083	31.9%
SWD	1,716	13.1%	3,477	12.7%	9,195	12.7%
LEP	682	5.2%	1,343	4.9%	3,574	4.9%
Male	6,733	51.5%	14,044	51.4%	36,978	51.1%
Female	6,337	48.5%	13,255	48.6%	35,406	48.9%
American Indian	63	0.5%	125	0.5%	332	0.5%
Asian	333	2.5%	1,460	5.3%	4,264	5.9%
Black/African American	4,589	35.1%	7,484	27.4%	19,157	26.5%
Hispanic/Latino	1,943	14.9%	3,441	12.6%	9,042	12.5%
Multiracial	579	4.4%	1,245	4.6%	3,180	4.4%
White	5,563	42.6%	13,544	49.6%	36,409	50.3%
Total	**13,070**	**100%**	**27,299**	**100%**	**72,384**	**100%**

Note: 1. Secondary schools include students attending middle and high school.
2. Students will appear in more than one category: race and gender, ED, SWD, and/or LEP.
Data Source: 2010-11 WCPSS End-of-Year Middle and High School Student Rosters

MATCHED GROUP DEMOGRAPHICS

The student demographics at the matched schools are depicted in Table 4. While Table 2 displays the demographic characteristics of all students attending SIOP® schools in 2010-11, Table 4 represents only schools targeted for three consecutive years of SIOP® training and support and the comparison schools that were matched to them. One SIOP® school was excluded from the matched analysis because they were involved in SIOP® less than three years. Dropping this school had little impact on the overall demographic patterns for the SIOP® group.

Table 4 shows the demographic characteristics of the 3,685 elementary school students and 2,492 middle school students attending schools receiving three years of support implementing SIOP®. While matching was conducted at the school level rather than individual one-to-one student matches, the distribution of the demographic characteristics of students attending SIOP® schools with three years of support and matched schools were very similar.

Table 4
2010-11 Characteristics of Students Attending SIOP® Schools Receiving 3 Years of Support

	SIOP® Elementary Schools with 3 Years of Support		Matched Elementary School Students		SIOP® Middle Schools with 3 Years of Support		Matched Middle School Students	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
ED	2,197	59.6%	2,099	56.3%	1,335	53.6%	1,439	52.7%
SWD	451	12.2%	424	11.4%	425	17.1%	471	17.3%
LEP	688	18.7%	531	14.2%	224	9.0%	199	7.3%
Male	1,875	50.9%	1,926	51.7%	1,303	52.3%	1,368	50.1%
Female	1,810	49.1%	1,802	48.3%	1,189	47.7%	1,362	49.9%
American Indian	17	0.5%	7	0.2%	19	0.8%	12	0.4%
Asian	119	3.2%	58	1.6%	46	1.8%	67	2.5%
Black/African Am.	1,393	37.8%	1,454	39.0%	863	34.6%	1,083	39.7%
Hispanic/Latino	907	24.6%	828	22.2%	528	21.2%	469	17.2%
Multiracial	173	4.7%	205	5.5%	95	3.8%	138	5.1%
White	1,076	29.2%	1,176	31.5%	941	37.8%	961	35.2%
Total	**3,685**	**100%**	**3,728**	**100%**	**2,492**	**100%**	**2,730**	**100%**

Note: Students will appear in more than one category: race and gender, ED, SWD, and/or LEP.
Data Source: 2010-11 WCPSS End-of-Year Elementary and Middle School Student Rosters and WCPSS Demographics: School Statistics and Maps, 2010-11 at http://www.wcpss.net/demographics/reports/book09a.pdf

ACADEMIC ACHIEVEMENT RESULTS

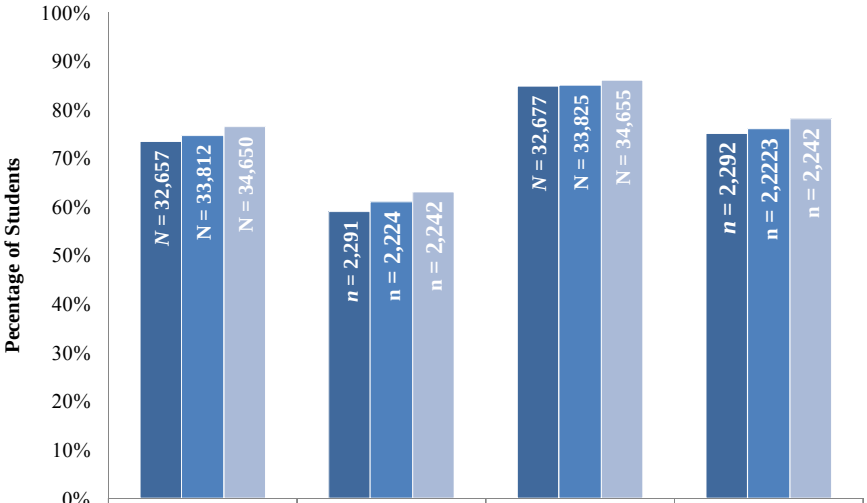
Question 1: Have schools targeted for SIOP®, Secondary Literacy, and Secondary Mathematics been effective in terms of outcomes for students (compared to the district overall)?

The percentage of students proficient in reading and mathematics at schools targeted for support implementing SIOP®, Secondary Literacy Initiative, or Secondary Mathematics Initiative all showed improvement in the percentage of students scoring at grade level (proficient) in reading and mathematics, but increases were either similar or only slightly higher than for WCPSS overall. Students attending schools supported by SIOP® (with the exception of middle school mathematics) and Secondary Literacy experienced greater growth than the district; this was not true among schools supported by the Secondary Mathematics Initiative.

Academic Proficiency

Figure 1 displays the percentage of students in grades 3-5 proficient in reading and mathematics for SIOP® targeted schools and WCPSS overall. From 2008-09 to 2010-11, there was an increase in the percentage of students proficient in reading and mathematics at targeted schools and for WCPSS overall. From 2008-09 to 2010-11 SIOP® targeted schools had fewer students proficient than for WCPSS overall. While both SIOP® schools and WCPSS experienced a percentage point increase, the increase in the percentage of students proficient in reading and mathematics at the targeted schools was just slightly higher (1 to 2 percentage points) than WCPSS overall.

Figure 1
Percentage of Students in Grades 3-5 Proficient, 2008-09 to 2010-11

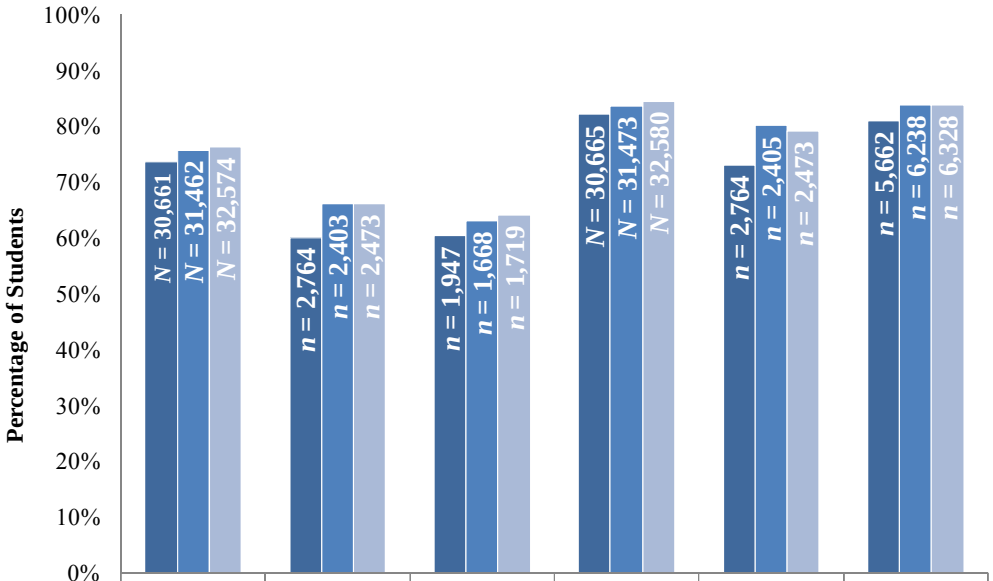


	WCPSS (Reading)	SIOP® (Reading)	WCPSS (Math)	SIOP® (Math)
2008-09	73.4%	59.0%	84.7%	75.0%
2009-10	74.6%	61.0%	85.0%	76.0%
2010-11	76.3%	63.0%	85.9%	78.0%

Data Source: 2010-11 WCPSS Elementary and Middle Disaggregated Charts

Figure 2 displays the percentage of students in grades 6-8 proficient in reading and mathematics at SIOP® targeted schools, schools implementing Secondary Literacy and Secondary Mathematics Initiatives, and WCPSS overall. For all groups considered there was an increased percentage of students proficient in reading and mathematics from 2008-09 to 2010-11. While schools targeted for SIOP® had fewer students proficient in 2008-09 and 2010-11 than WCPSS overall, the increase in the percentage of students proficient in reading and mathematics at the targeted schools was slightly higher than seen in WCPSS overall (by three to four more percentage points). Little difference was evident for Secondary Literacy and Secondary Mathematics Initiatives versus the system between 2009-10 (prior to implementation) and 2010-11 (the first year of implementation).

Figure 2
Percentage of Students in Grades 6-8 Proficient
2008-09 to 2010-11



	WCPSS	SIOP® Reading	MS Literacy	WCPSS	SIOP® Math	MS Math
2008-09	73.5%	60.0%	60.2%	82.0%	73.0%	80.9%
2009-10	75.6%	66.0%	63.0%	83.5%	80.0%	83.7%
2010-11	76.1%	66.0%	63.9%	84.4%	79.0%	83.8%

Note: MS = middle school
Data Source: 2010-11 WCPSS Disaggregated Charts for Elementary and Middle Schools.

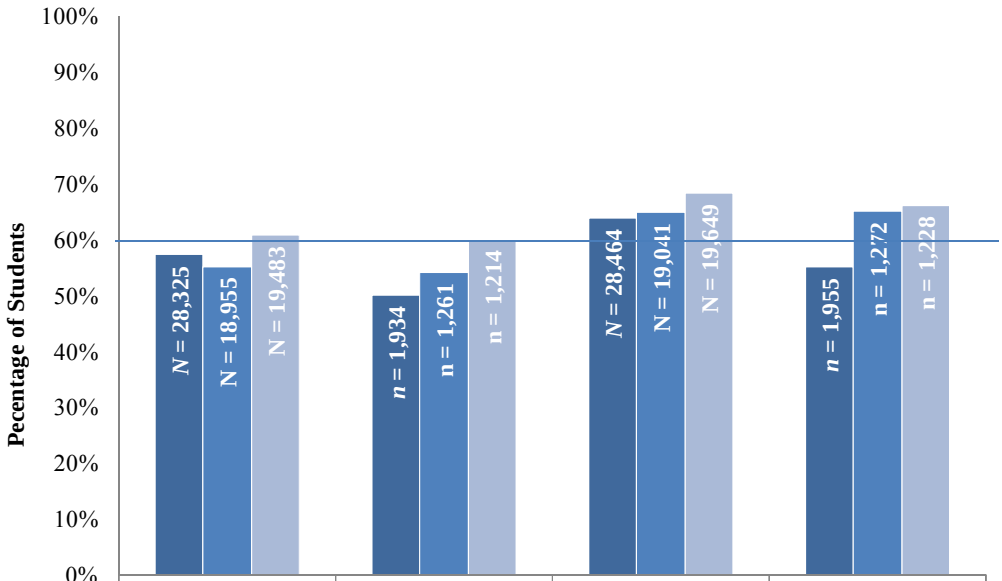
Academic Growth

Another way to gauge success in improving achievement is to examine the percentage of students reaching annual state growth targets. Examining the percentage of students reaching growth is a more sensitive method of assessing student gains even when growth was not sufficient to change level scores. The state's ABCs growth formula reflects approximately one

year's growth for one year of instruction for each student. Schools are considered to show high growth if 60% of their students reach their growth target.

Elementary growth results were quite positive. The percentage of students in grades 4 and 5 who met growth standards increased from 2008-09 to 2010-11 at SIOP® targeted schools and WCPSS overall (see Figure 3). Indeed, increases at SIOP® targeted schools were 10 percentage points in reading and 11 percentage points in mathematics. These percentage point increases were more than double that experienced by WCPSS overall (3.5 percentage point increase in reading and a 4.5 percentage point increase in mathematics above increases in WCPSS overall). In 2010-11, students enrolled in the SIOP® targeted elementary schools met high growth in reading and mathematics, with 60.0% and 66.0% of students meeting their growth targets respectively.

Figure 3
Percent of Students in Grades 4 and 5 Meeting Growth
2008-09 to 2010-11



	Reading		Math	
	WCPSS	SIOP®	WCPSS	SIOP®
2008-09	57.2%	50.0%	63.8%	55.0%
2009-10	55.1%	54.0%	64.9%	65.0%
2010-11	60.7%	60.0%	68.3%	66.0%

Data Source: 2010-11 WCPSS Elementary and Middle School Disaggregated Charts

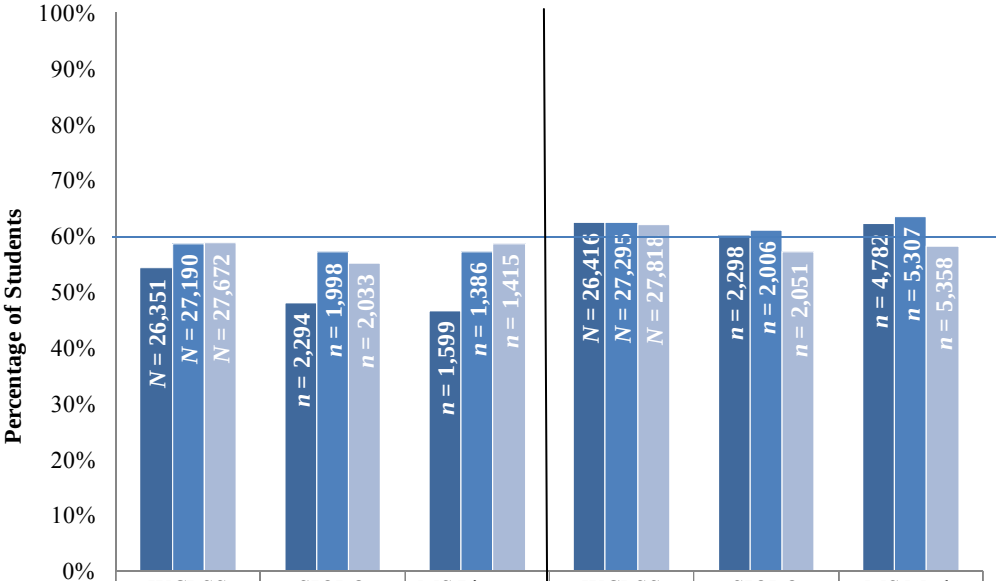
The results in grades 6-8 were mixed; reading results were positive but math results were not.

- In reading, the percentage of students in grades 6-8 who met growth increased from 2008-09 to 2010-11 (see Figure 4) for all three groups compared, with the district increasing less than the SIOP targeted and the literacy initiative schools. For SIOP® targeted middle schools, the percentage increased nine points between 2008-09 and 2009-10 and then dropped by two percentage points between 2009-10 and 2010-11, with a net gain of seven points across two years. The Secondary Literacy Initiative actually began in 2010-11, so the impact that might

be attributed to the initiative between 2009-10 and 2010-11 was 1.5 percentage points. The district overall increased 4.5 percentage points over two years, with almost all of this occurring between 2008-09 and 2009-10.

- In mathematics, however, results for the two math initiatives were not favorable compared to the district. For SIOP® math, the percentage of students meeting growth standards increased slightly between 2008-09 and 2009-10 and then decreased between 2009-10 and 2010-11 (for a net loss of three percentage points). Middle school math efforts began in 2010-11; the percentage of students meeting growth targets declined five points between 2009-10 (before service) and 2010-11 (after service). The district stayed stable between 2008-09 and 2009-10, and declined only 0.3 percentage points between 2009-10 and 2010-11.

Figure 4
Percentage of Students in Grades 6-8 Meeting Growth
2008-09 to 2010-11



	WCPSS	SIOP® Reading	MS Literacy	WCPSS	SIOP® Math	MS Math
2008-09	54.2%	48.0%	46.5%	62.3%	60.0%	62.2%
2009-10	58.6%	57.0%	57.1%	62.3%	61.0%	63.5%
2010-11	58.7%	55.0%	58.6%	62.0%	57.0%	58.2%

Data Source: 2010-11 WCPSS Elementary and Middle School Disaggregated Charts

Three-Year Change in Students Meeting Growth Targets

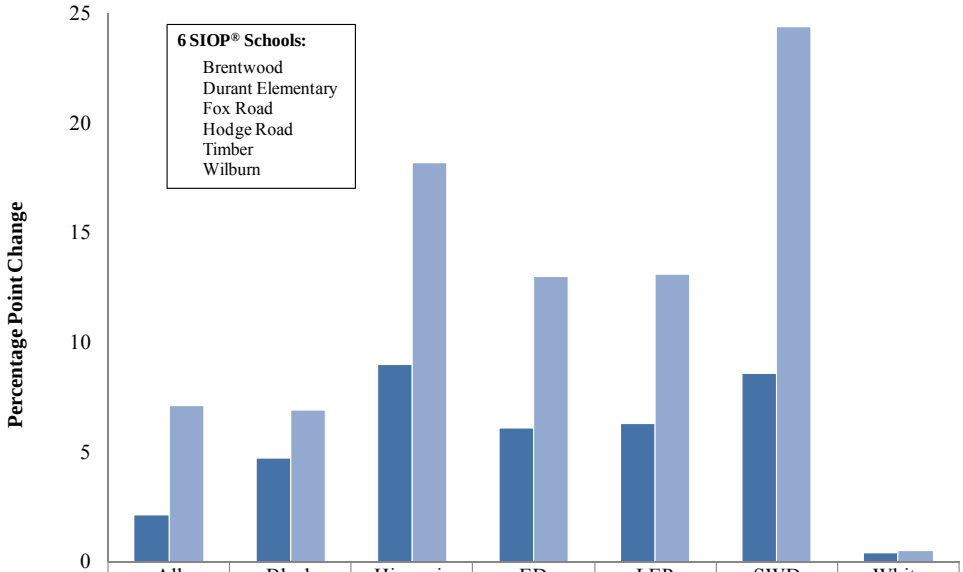
Figures 5-8 display the three-year percentage point changes in students meeting growth targets by ethnicity and academic risk factor and are focused on SIOP® targeted elementary and middle schools.

For SWD students in reading and LEP students in mathematics, the three-year percentage point increases in students meeting growth was considerably higher than the district.

Reading

At the elementary level, both WCPSS overall and SIOP® targeted schools experienced a positive percentage point change in students meeting reading growth targets. This percentage point change at SIOP® schools was even greater than for WCPSS overall for each subgroup of interest. In elementary school, SWD and Hispanic/Latino student subgroups not only had the largest percentage point change from 2008-09 to 2010-11, but also had the largest difference between their subgroups and the WCPSS gains overall.

Figure 5
Three-Year Percentage Point Change in Students Meeting Reading Growth Targets
2008-09 to 2010-11, Grades 4-5



	All	Black	Hispanic	ED	LEP	SWD	White
WCPSS	2.1	4.7	9.0	6.1	6.3	8.6	0.4
SIOP®	7.1	6.9	18.2	13.0	13.1	24.4	0.5

Note: This figure displays the percentage point difference between the percentages of students meeting growth targets in 2009-09 to those meeting growth targets in 2010-11.

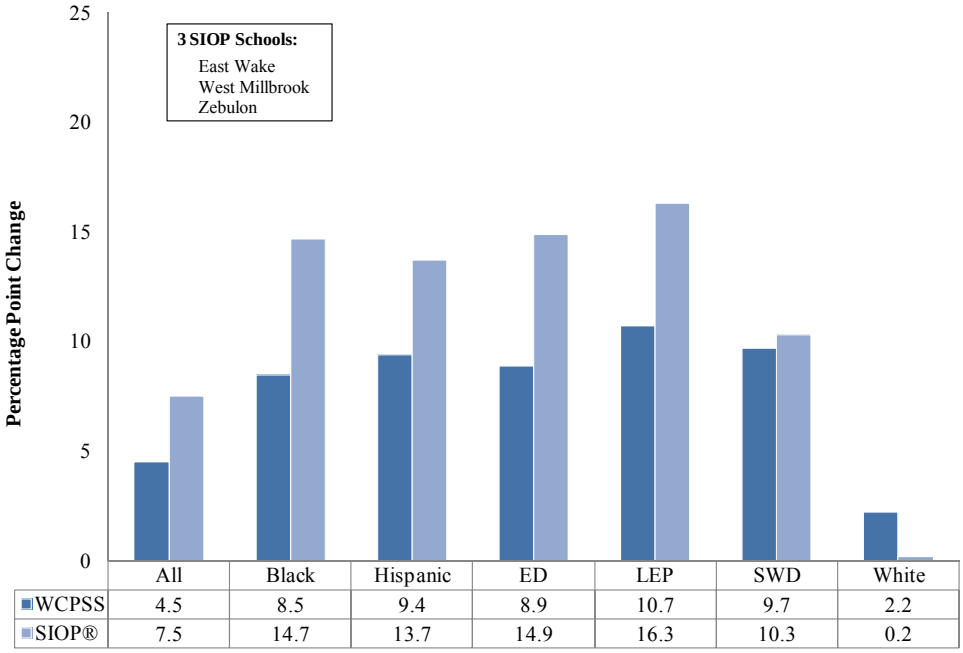
Number of Students Associated with Three-Year Percentage Point Change in Figure 5
2008-09 to 2010-11, Grades 4-5

		All	Black/ African American	Hispanic/ Latino	ED	LEP	SWD	White
WCPSS	2008-09	10,764/18,356	1,838/3,631	463/915	2,393/4,802	69/137	452/939	6,129/9,850
	2010-11	11,856/19,517	2,328/4,210	1,569/2,632	3,453/6,174	359/633	872/1,536	6,308/10,076
SIOP®	2008-09	667/1,257	219/464	115/235	287/612	35/72	35/91	263/419
	2010-11	730/1,214	249/460	194/289	407/679	87/141	44/70	229/362

Note: Numerator = the percentage of students meeting growth, Denominator = total group.
Data Source: 2010-11 WCPSS Elementary School Disaggregated Charts

For middle schools, as for elementary schools, both WCPSS overall and SIOP® targeted schools experienced a positive percentage point change in students meeting reading growth targets. The percentage point change at SIOP® schools was greater than for WCPSS overall and for all subgroups considered with the exception of White students; thus, promoting the closing of achievement gaps. Indeed, each middle school subgroup considered (with the exception of White students) had a change in students meeting reading growth targets greater than 10 percentage points from 2008-09 to 2010-11.

Figure 6
Three-Year Percentage Point Change in Students Meeting Reading Growth Targets
2008-09 to 2010-11, Grades 6-8



Note: This figure displays the percentage point difference between the percentages of students meeting growth targets in 2009-09 to those meeting growth targets in 2010-11.

Number of Students Associated with Three-Year Percentage Point Change in Figure 6
2008-09 to 2010-11, Grades 6-8

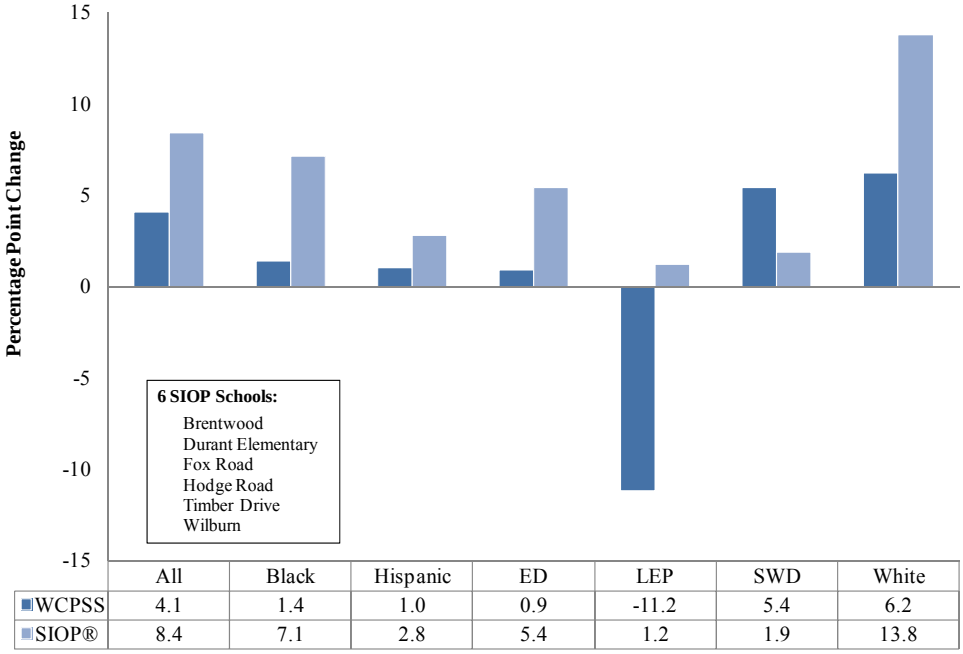
		All	Black/ African American	Hispanic/ Latino	ED	LEP	SWD	White
WCPSS	2008-09	14,279/26,336	3,200/6,694	1,324/2,629	3,453/7,240	836/1,695	1,583/3,324	8,054/14,240
	2010-11	16,231/27,659	3,749/6,659	2,014/3,369	4,756/8,405	681/1,134	1,735/3,028	8,505/14,478
SIOP®	2008-09	1,092/2,294	353/839	183/387	442/1,049	107/239	126/330	462/905
	2010-11	1,120/2,033	370/652	252/413	564/989	88/144	112/231	430/839

Data Source: 2010-11 WCPSS Middle School Disaggregated Charts
Note: Numerator = the percentage of students meeting growth, Denominator = total group.

Mathematics

SIOP® targeted elementary schools experienced a positive percentage point change in students meeting mathematics growth targets overall and for each subgroup considered. Additionally, the percentage point change at SIOP® schools was greater than WCPSS overall and for the subgroups considered with the exception of the SWD subgroup. One highlight is that, while WCPSS overall had a decrease of 11 percentage points for growth between 2008-09 and 2010-11, the LEP student subgroup at SIOP® targeted elementary schools had a one percentage point increase.

Figure 7
Three-Year Percentage Point Change in Students Meeting Mathematics Growth Targets 2008-09 to 2010-11, Grades 4-5



	All	Black	Hispanic	ED	LEP	SWD	White
WCPSS	4.1	1.4	1.0	0.9	-11.2	5.4	6.2
SIOP®	8.4	7.1	2.8	5.4	1.2	1.9	13.8

Note: 1. Percentage point scale ranges from -15 to 15 in order to capture negative results.
2. This figure displays the percentage point difference between the percentages of students meeting growth targets in 2009-09 to those meeting growth targets in 2010-11.

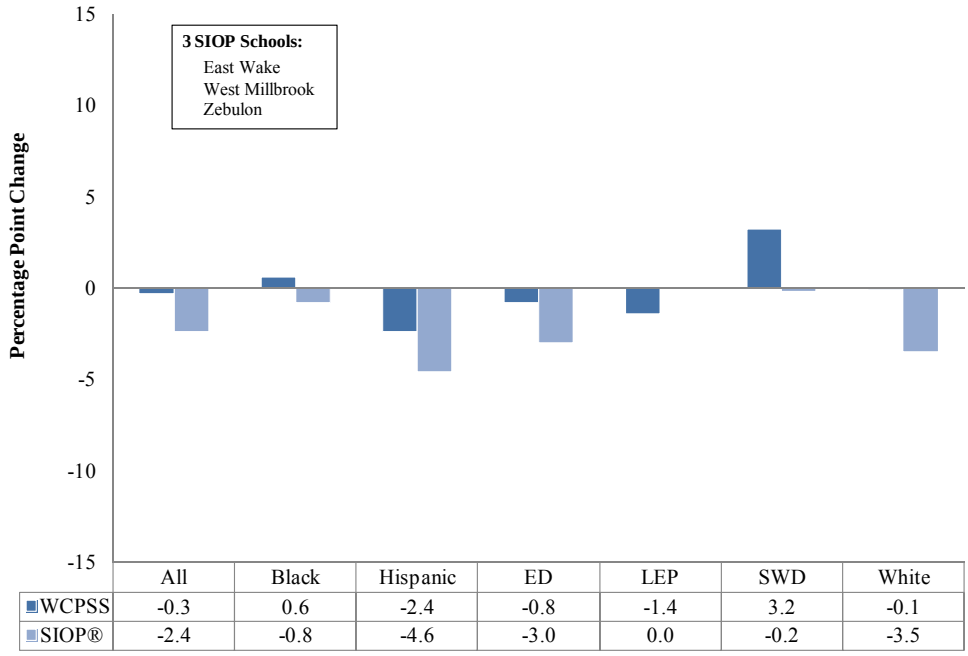
Number of Students Associated with Three-Year Percentage Point Change in Figure 7 2008-09 to 2010-11, Grades 4-5

		All	Black/ African American	Hispanic/ Latino	ED	LEP	SWD	White
WCPSS	2008-09	11,866/18,476	2,197/673	606/925	3036/4927	157/204	531/989	6,400/9,885
	2010-11	13,445/19,683	2,595/240	1793/2695	3919/6267	448/681	985/1,668	7,185/10,121
SIOP®	2008-09	739/1,279	257/476	154/241	359/624	73/105	52/91	246/423
	2010-11	813/1,228	284/465	198/297	432/687	104/147	52/88	262/364

Note: Numerator = the percentage of students meeting growth, Denominator = total group.
Data Source: 2010-11 WCPSS Elementary School Disaggregated Charts

At the middle school level, WCPSS and SIOP® targeted middle schools either remained constant or experienced a percentage point decrease in students meeting mathematics growth targets from 2008-09 to 2010-11 overall and for each subgroup considered (with the exception of WCPSS' Black/African American and SWD student subgroups).

Figure 8
Three-Year Percentage Point Change in Students Meeting Mathematics Growth Targets 2008-09 to 2010-11, Grades 6-8



	All	Black	Hispanic	ED	LEP	SWD	White
WCPSS	-0.3	0.6	-2.4	-0.8	-1.4	3.2	-0.1
SIOP®	-2.4	-0.8	-4.6	-3.0	0.0	-0.2	-3.5

Note: 1. Percentage point scale ranges from -15 to 15 in order to capture negative results.
2. This figure displays the percentage point difference between the percentages of students meeting growth targets in 2009-09 to those meeting growth targets in 2010-11.

Number of Students Associated with Three-Year Percentage Point Change in Figure 8 2008-09 to 2010-11, Grades 6-8

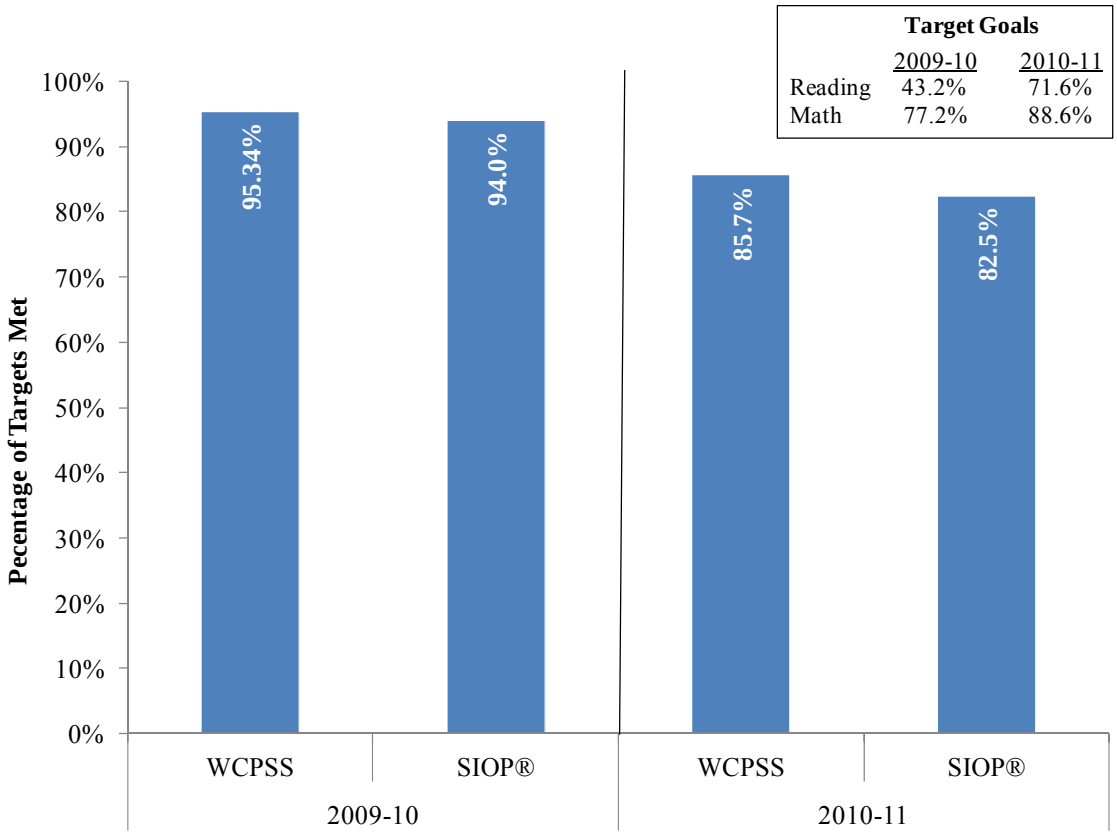
		All	Black/ African American	Hispanic/ Latino	ED	LEP	SWD	White
WCPSS	2008-09	16,454/26,402	3,714/6,688	1,609/2,660	4,083/7,279	1,091/1,753	1,786/3,326	9,164/14,255
	2010-11	17,252/27,808	3,753/6,683	1,996/3,439	4,702/8,511	765/1,258	1,745/3,068	9,301/14,495
SIOP®	2008-09	1,376/2,298	477/838	239/391	620/1,053	153/245	176/326	554/904
	2010-11	1,178/2,051	369/658	239/423	563/1,007	98/157	128/238	484/838

Note: Numerator = the percentage of students meeting growth, Denominator = total group.
Data Source: 2010-11 WCPSS Middle School Disaggregated Charts

Adequate Yearly Progress (AYP)

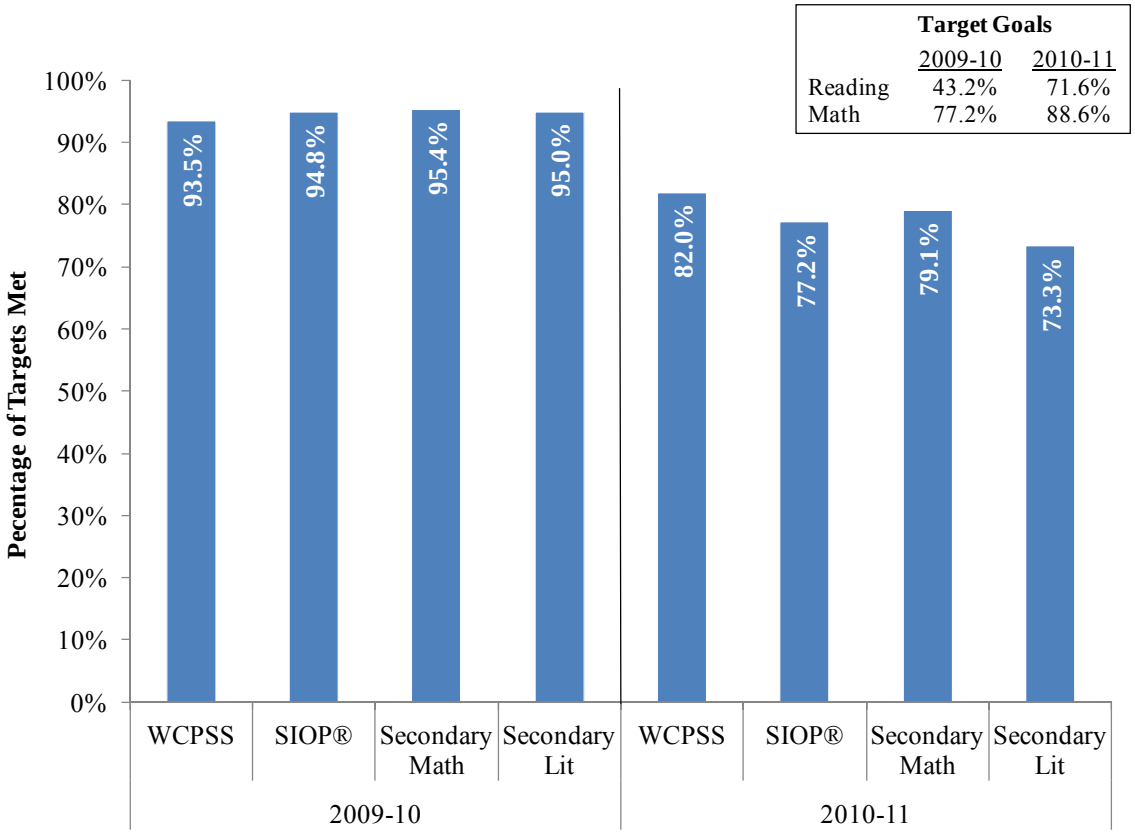
Given WCPSS was in district-wide improvement as a result of failing to meet AYP in mathematics at the district level, this section presents the AYP results for schools targeted by district improvement efforts and WCPSS overall. A long-term goal of district-wide improvement efforts was to succeed in exiting this status. This goal became considerably more difficult in 2010-11, due to a considerable increase in AYP targets in 2010-11, as the 100% targets set for 2013-14 approaches. The targets increased 28.4 percentage points in reading and 11.4 percentage points in mathematics for elementary and middle schools; and 30.8 and 15.8 percentage points (in reading and mathematics respectively) for high schools. Thus, these results should be considered within the context of the higher targets required to meet AYP. With the new targets in place, each grade span—elementary, middle, and high school—experienced a decrease in the percentage of AYP targets met for WCPSS overall and each District Improvement initiative considered (see Figures 9-11).

Figure 9
K-5 Percentage of AYP Targets Met
2009-10 and 2010-11



Note: Number of schools included in figure are: In 2009-10, WCPSS = 102, SIOP® = 14, and Math Coaches = 44; and in 2010-11, WCPSS = 103, SIOP® = 7, and Math Coaches = 52
Data Source: 2009-10 and 2010-11 AYP by Level: Elementary, Middle, and High

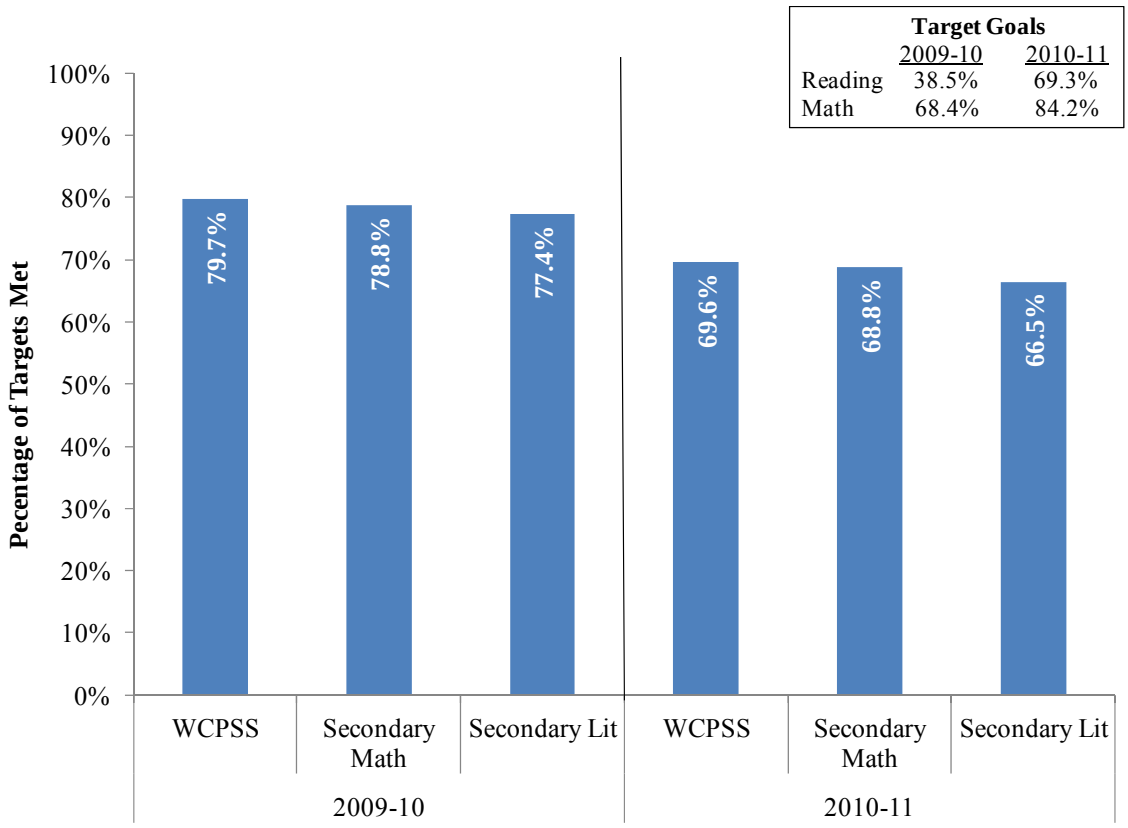
Figure 10
Grades 6-8 Percentage of AYP Targets Met
2009-10 and 2010-11



Note: Number of schools included in figure are: In 2009-10, WCPSS = 30, SIOP® = 5, Secondary Math = 7, and Secondary Literacy = 2; and in 2010-11, WCPSS = 33, SIOP® = 6, Secondary Math = 7, and Secondary Literacy = 2

Data Source: 2009-10 and 2010-11 AYP by Level: Elementary, Middle, and High

Figure 11
Grades 9-12 Percentage of AYP Targets Met
2009-10 and 2010-11



Note: Number of schools included in figure are: In 2009-10, WCPSS = 23, Secondary Math = 11, and Secondary Literacy = 10; and in 2010-11, WCPSS = 25, Secondary Math = 11, and Secondary Literacy = 10

Data Source: 2009-10 and 2010-11 AYP by Level: Elementary, Middle, and High

Question 2: Did SIOP® targeted schools and teachers with the highest implementation ratings show greater student growth?

In the spring of 2011, Praxis Research, Inc. staff collaborated with the Data and Accountability (formally known as Evaluation and Research) and District Improvement staff to modify a research-based protocol; originally generated by the Center for Applied Linguistics (CAL) and customized for WCPSS.[4] Praxis staff, along with WCPSS' District Improvement coaches, monitored the implementation of SIOP® at 15 WCPSS elementary and middle schools. A stratified random sample of mathematics, language arts, and English as a Second Language (ESL) classrooms was selected. Additional observations from a convenience sample of available teachers supplemented the sample. Eight monitors conducted 171 observations ranging from 30

[4] The Center for Applied Linguistics worked with WCPSS staff to customize the existing research-based SIOP® protocol (this instrument was utilized to observe, rate, and provide feedback on lessons) and verify the inter-rater reliability of the revised instrument (Echevarria, Vogt, & Short, 2008).

minutes to an hour in order to determine the level of SIOP® implementation occurring within each classroom. Utilizing a SIOP® Observation Summary Sheet, they monitored for lesson preparation, building background, comprehensible input, strategies, interaction, practice and application, lesson delivery, and review and assessment. Within each of these areas several features (26 in all) were rated using a 1-5 scale in which 5 indicated high implementation. The 26 ratings were averaged to create an overall implementation score for that observation.

Targeted SIOP® Schools

Table 5 displays the average SIOP® implementation score and the average 2010-11 reading and mathematics academic change (AC) score by school. The state ABCs AC score reflects whether students as a group grew more or less than the target projection for that year. A growth score of zero means the target was met exactly. Table 5, which is sorted by SIOP® implementation score, shows in general that schools with higher SIOP® implementation scores also received higher reading and mathematics AC scores. It also illustrates that five of the eight schools with SIOP® targeted support for three or more years had higher implementation and AC scores (but three did not).

Table 5
Average of SIOP® Implementation Score and Mean
2010-11 AC Score of Targeted SIOP® Schools

School	Average SIOP® Implementation Score	Average 2010-11 AC Score	
		Reading	Math
Harris Creek Elementary	2.83	**0.17**	**0.28**
Westlake Elementary	3.09	0.07	0.11
Zebulon Middle*	3.11	0.02	0.04
W. Millbrook Middle*	3.12	0.04	0.02
N. Garner Middle	3.13	0.09	0.09
E. Garner Middle	3.21	**0.13**	0.05
Wilburn Elementary*	3.24	-0.02	0.09
Combs Elementary	3.33	**0.11**	0.10
E. Wake Middle*	3.42	**0.11**	**0.15**
Fuquay-Varina Elementary	3.42	**0.17**	**0.43**
Durant Road Elementary*	3.45	**0.11**	**0.27**
Timber Drive Elementary*	3.61	**0.20**	**0.22**
Wakefield Elementary	3.61	0.08	**0.18**
Fox Road Elementary*	3.66	0.06	**0.20**
Brentwood Elementary*	3.70	**0.18**	**0.25**
Total	**3.30**	**0.09**	**0.13**

Note: 1. The SIOP® implementation score ranged from 1-5.
2. Bolded Blue font indicates schools with the average 2010-11 AC scores above the overall average.
3. * indicates SIOP® schools receiving three years of support with implementation.

Data Source: 2010-11 WCPSS End-of-Year Elementary and Middle School Student Rosters and 2010-11 SIOP® observation data

Teachers Implementing SIOP®

In order to further investigate the relationship between fidelity of implementation and student achievement, this section examines the relationship between the Teacher Effect Education Value Added Assessment System (EVAAS®) scores and SIOP® implementation scores. Teacher Effect scores from EVAAS®, which are based on EOG scores; estimate a teacher's influence on students' academic progress. The Teacher Effect score is a function of the difference between students' predicted and actual scores; thus, a 0.0 represents an average teacher.

SIOP® observations each resulted in an implementation score of 1-5. Teachers with more than one score due to multiple observations were assigned one score based on the average of their scores.

EVAAS scores are generated for teachers teaching grade 5-8; thus, this analysis represents only a segment of the K-8 teachers observed. Based on the 40 teachers with available EVAAS® and SIOP® observation data, teachers with high implementation scores (above the mean score of 3.30) had a higher percentage with a positive Teacher Effect EVAAS® score, although the percentage did not reach statistical significance. A positive Teacher Effect EVAAS® score indicates a teacher who was able to move their students on average above what was predicted.

MATCHED SCHOOL ACHIEVEMENT RESULTS FOR SIOP®

In order to improve the strength of the evaluation, a matched school analysis was conducted. Student achievement outcomes were expected for students once SIOP® was in a school for three years. Because the program was rolled out over time, we conducted a matched school analysis restricted to schools that had received three years of additional support implementing SIOP® and schools matched on achievement and demographic characteristics (the results of the matched analysis address the study's next question).

Question 3: How did the students in SIOP® targeted schools progress compared to non-targeted (matched schools)?

A higher percentage of students attending SIOP® middle schools were able to move up to Level IV in reading and mathematics between 2009-10 and 2010-11 than were students at matched schools.

From 2008-09 to 2010-11, SIOP® schools had a greater decrease in students with a Reading and Mathematics EOG score of Level I and a greater increase in students scoring Level IV than did matched schools (with the exception of middle school students with a Mathematic EOG score of Level I).[5] SIOP® middle schools did, however, experience a significant decrease in students scoring Level II on their mathematics EOG which was not seen at matched schools. SIOP® and matched schools both had a significant increase in EOG Reading Level III students from 2008-09 to 2010-11. This

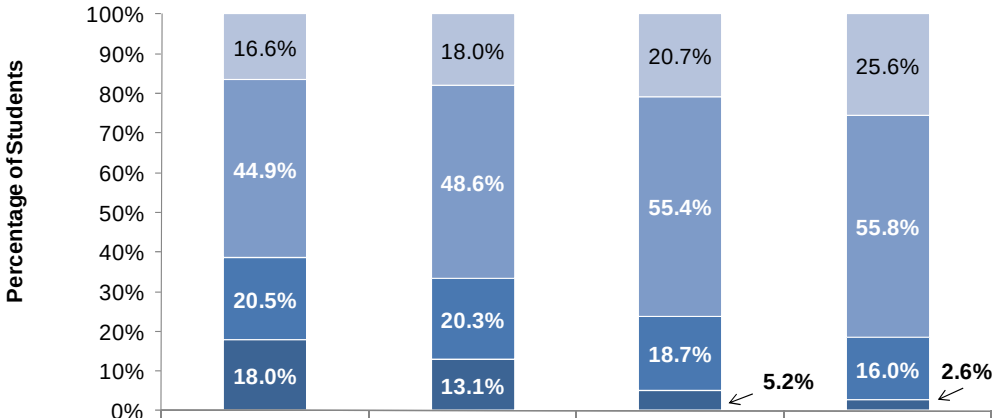
[5] EOG Levels III and IV represent proficiency.

difference was similar at the elementary school level, but SIOP® middle schools experienced a larger increased than did matched schools.

Academic Proficiency

The 2008-09 reading and mathematics EOG proficiency levels for students who attended schools with three years of support implementing SIOP® and students at matched schools are presented in Figures 12 and 13. The 2008-09 EOG scores were used to capture student performance prior to the examination of 2010-11 EOG results. Overall proficiency rates (Level III and IV) for the two groups were similar at both the elementary and middle school levels (varying ≤ five percentage points by subject and school level).

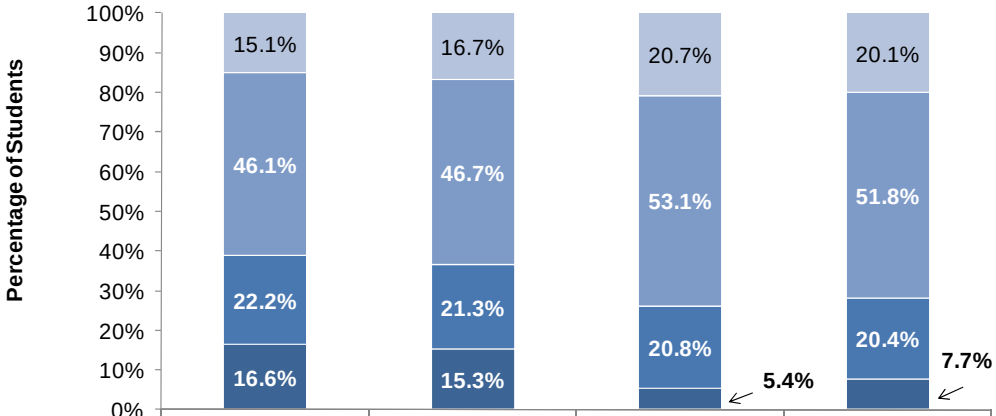
Figure 12
2008-09 Reading and Mathematics EOG Level for SIOP® and Matched Elementary Schools



	SIOP® Students n=1,875	Matched Students n=1,770	SIOP® Students n=1,884	Matched Students n=1,786
	Reading		Mathematics	
Level IV	16.6%	18.0%	20.7%	25.6%
Level III	44.9%	48.6%	55.4%	55.8%
Level II	20.5%	20.3%	18.7%	16.0%
Level I	18.0%	13.1%	5.2%	2.6%

Data Source: 2008-09 WCPSS Winscan files
Interpretation Example: 16.6% of students attending schools targeted for SIOP® support for three years scored a Level IV on their reading EOG in 2008-09 compared to 18.0% of students at matched schools.

Figure 13
2008-09 Reading and Mathematics EOG Level for SIOP® and Matched Middle Schools



	SIOP® Students n=2,666	Matched Students n=2,738	SIOP® Students n=2,668	Matched Students n=2,765
	Reading		Mathematics	
Level IV	15.1%	16.7%	20.7%	20.1%
Level III	46.1%	46.7%	53.1%	51.8%
Level II	22.2%	21.3%	20.8%	20.4%
Level I	16.6%	15.3%	5.4%	7.7%

Data Source: 2008-09 WCPSS Winscan files

Tables 6 and 7 display the 2008-09 and 2010-11 EOG levels for schools targeted for three years of support implementing SIOP® and matched schools. Elementary and middle school reading results revealed:

- SIOP® and matched schools both had a significant decrease in Level I students from 2008-09 to 2010-11; however, the decrease was larger among SIOP® schools.
- SIOP® and matched schools both had a significant increase in Level III students from 2008-09 to 2010-11. This difference was similar at the elementary school level, but SIOP® middle schools experienced a larger increased than did matched schools.

Mathematics results at SIOP® and matched schools revealed:

- SIOP® elementary schools had a significant decrease in Level I students from 2008-09 to 2010-11 while for matched schools there was a 0.1 percentage point increase.
- SIOP® and matched middle schools, both had a significant decrease in Level I students from 2008-09 to 2010-11; however, the decrease was larger among matched schools.
- SIOP® middle schools had a significant decrease in Level II students and a significant increase in Level IV students from 2008-09 to 2010-11.
- Matched middle schools had a significant increase in Level III students from 2008-09 to 2010-11.

Table 6
Reading and Mathematics EOG Levels for Elementary Students Attending 3-Year SIOP® Schools and Matched Schools

		Reading			Math		
		2008-09	2010-11	Change	2008-09	2010-11	Change
Level I	SIOP®	18.0%	13.5%	-4.5%*	5.2%	2.8%	-2.4%*
	Matched	13.1%	10.4%	-2.7%*	2.6%	2.8%	0.1%
Level II	SIOP®	20.5%	20.6%	0.2%	18.7%	18.1%	-0.6%
	Matched	20.3%	20.3%	-0.1%	16.0%	15.7%	-0.3%
Level III	SIOP®	44.9%	49.0%	4.1%*	55.4%	54.2%	-1.2%
	Matched	48.6%	52.8%	4.2%*	55.8%	54.8%	-1.0%
Level IV	SIOP®	16.6%	16.8%	0.3%	20.7%	24.9%	4.2%*
	Matched	18.0%	16.6%	-1.5%	25.6%	26.8%	1.2%

Note: 1. * indicates the difference between 2008-09 and 2010-11 was significant based on a z statistic calculated for students attending SIOP® targeted schools and matched schools.
2. Percentages under Change column are rounded to the nearest tenths place.
Data Source: 2008-09 and 2010-11 WCPSS Winscan files
Interpretation Example: Among students attending SIOP® targeted elementary schools that received three years of additional support, there was a significant increase (4.2%) in students scoring Level IV on their Mathematics EOG from 2008-09 to 2010-11.

Table 7
Reading and Mathematics EOG Levels for Middle School Students Attending 3-Year SIOP® Schools and Matched Schools

		Reading			Math		
		2008-09	2010-11	Change	2008-09	2010-11	Change
Level I	SIOP®	16.6%	11.3%	-5.3%*	5.4%	4.2%	-1.2%*
	Matched	15.3%	13.1%	-2.2%*	7.7%	5.5%	-2.2%*
Level II	SIOP®	22.2%	22.2%	0.0%	20.8%	16.7%	-4.0%*
	Matched	21.3%	21.8%	0.6%	20.4%	21.7%	1.3%
Level III	SIOP®	46.1%	50.4%	4.3%*	53.1%	55.0%	1.9%
	Matched	46.7%	49.8%	3.0%*	51.8%	54.1%	2.3%*
Level IV	SIOP®	15.1%	16.1%	1.0%	20.7%	24.1%	3.4%*
	Matched	16.7%	15.3%	-1.4%	20.1%	18.7%	-1.4%

Note: 1. * indicates the difference between 2008-09 and 2010-11 was significant based on a z statistic calculated for students attending SIOP® targeted schools and matched schools.
2. Percentages under Change column are rounded to the nearest tenths place.
Data Source: 2008-09 and 2010-11 WCPSS Winscan files

Academic Growth of Matched Students

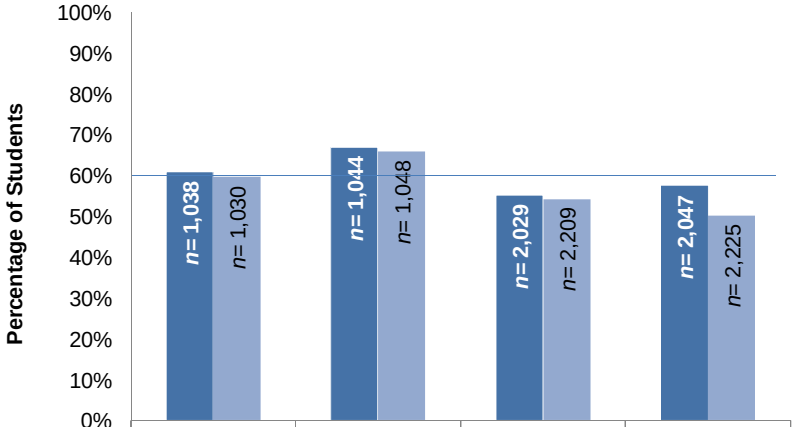
Increasing the percentage of students reaching growth targets is one way to gauge success in improving achievement, and is more sensitive to student gains even when growth was not sufficient to change level scores. The state's ABCs growth formula reflects approximately one year's growth for one year of instruction for each student. Schools are considered to show high growth if 60% of their students reach their growth target.

Overall Growth

A higher percentage of students attending SIOP® schools met growth in reading and mathematics than did students attending matched schools; this difference was only significant for mathematics at the middle school level. Results were not significant for middle school reading or for elementary reading and mathematics (see Figure 14).

A significantly higher percentage of students attending SIOP® middle schools met growth in mathematics than did students attending matched schools.

Figure 14
Percentage of Students Meeting 2010-11 Reading and Mathematics EOG Growth Targets



	Elementary		Middle	
	Reading	Math	Reading	Math*
SIOP®	60.9%	66.9%	55.1%	57.5%
Matched	59.5%	65.8%	54.2%	50.2%

Note: * indicates a significant difference between 3-Year SIOP® schools and matched schools
Data Source: 2010-11 WCPSS End-of-Year Elementary and Middle School Student Rosters

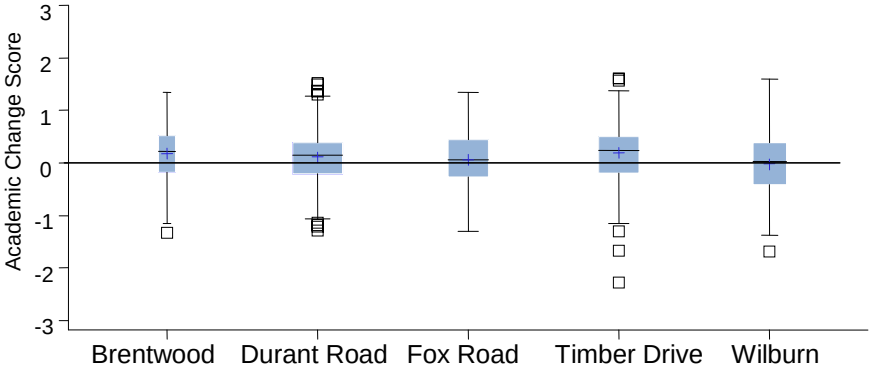
Academic Change

Academic change is another way of consider students' growth from 2009-10 to 2010-11. Keep in mind that a growth score of zero means the target was met exactly. Box plots were used to depict the mean, median, and range of the AC scores for students in SIOP® targeted schools and students attending matched schools in 2010-11 (Figures 15-18). The box represents the majority of student scores (25th to 75th percentile). The "whiskers," or vertical lines, extending from the

box, represent the range of scores, with the most extreme scores denoted by small boxes. The range of academic change scores for students attending SIOP® and matched schools by subject and school are illustrated in Figures 15-18. The mean and range (denoted by the "whiskers") of AC scores for reading and mathematics were similar for the two groups. Within each box, the mean is signified by a plus sign and the median by a horizontal line in the middle of the box. The average academic change scores in reading and mathematics hovered close to zero, indicating performance close to what was expected for both SIOP® and matched schools.

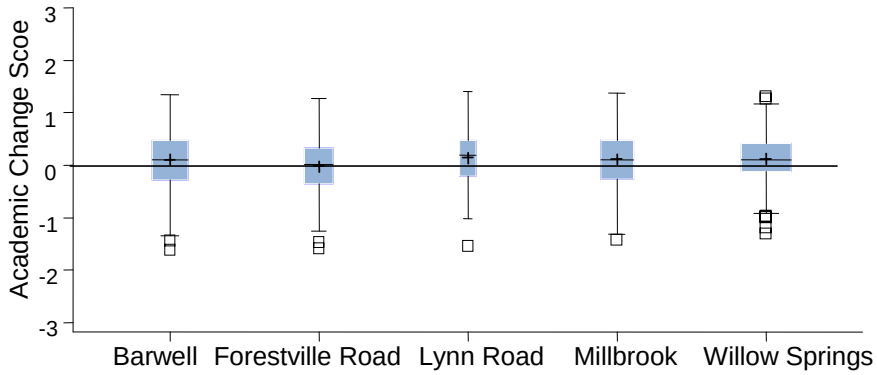
Figure 15
Reading EOG Academic Change Score for Elementary School Students Attending 3-Year SIOP® Schools and Matched Schools

3-Year SIOP® Schools



	Brentwood	Durant Road	Fox Road	Timber Drive	Wilburn
Min	-1.3	-1.3	-1.3	-2.3	-1.7
Mean	0.18	0.11	0.06	0.20	-.02
Max	1.34	1.53	1.35	1.62	1.60
Std Dev	0.53	0.50	0.51	0.57	0.55
N	111	294	242	244	202

Matched Schools

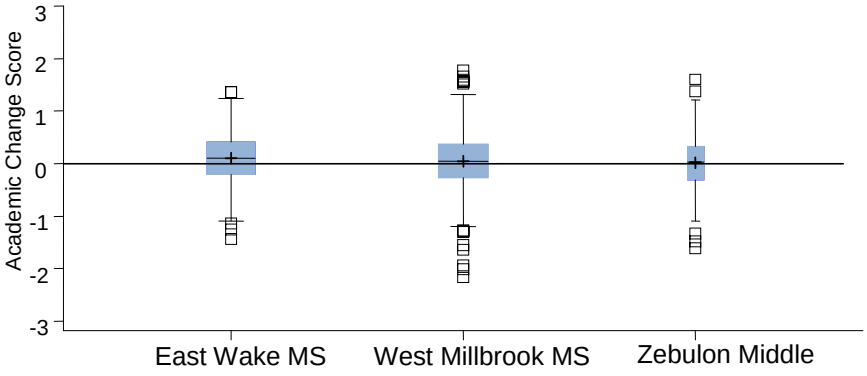


	Barwell	Forestville Road	Lynn Road	Millbrook	Willow Springs
Min	-1.6	-1.6	-1.5	-1.4	-1.3
Mean	0.11	-.02	0.14	0.12	0.12
Max	1.35	1.28	1.41	1.38	1.32
Std Dev	0.56	0.52	0.51	0.55	0.47
N	225	199	156	213	273

Note: Box width varies with N
Data Source: 2010-11 WCPSS End-of-Year Elementary School Student Roster

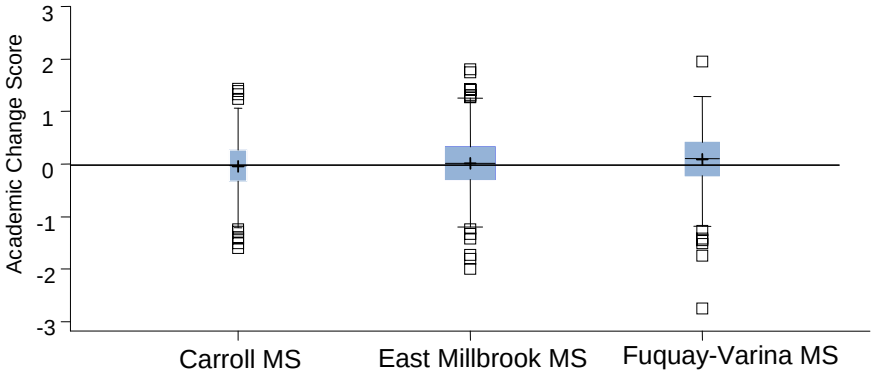
Figure 16
Reading EOG Academic Change Score for Middle School Students Attending 3-Year SIOP® Schools and Matched Schools

3-Year SIOP® Schools



	East Wake MS	West Millbrook MS	Zebulon Middle
Min	-1.4	-2.2	-1.6
Mean	0.11	0.04	0.02
Max	1.37	1.78	1.61
Std Dev	0.45	0.51	0.47
N	814	825	475

Matched Schools

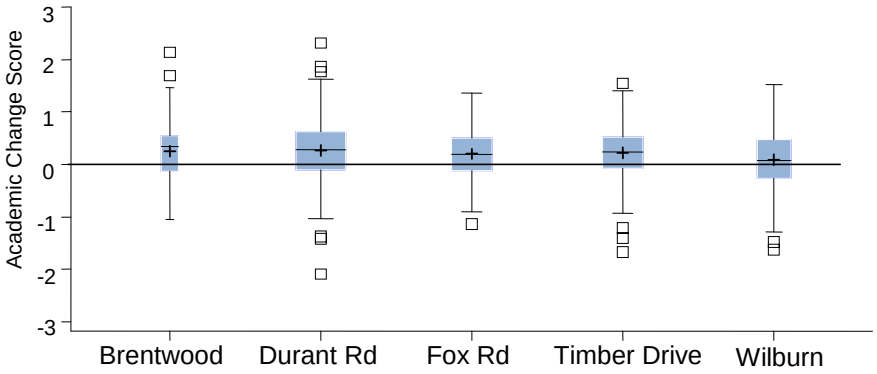


	Carroll MS	East Millbrook MS	Fuquay-Varina MS
Min	-1.6	-2.0	-2.7
Mean	-.04	0.02	0.10
Max	1.44	1.81	1.96
Std Dev	0.48	0.48	0.49
N	541	978	775

Note: Box Width varies with N
Data Source: 2010-11 WCPSS End-of-Year Middle School Student Roster

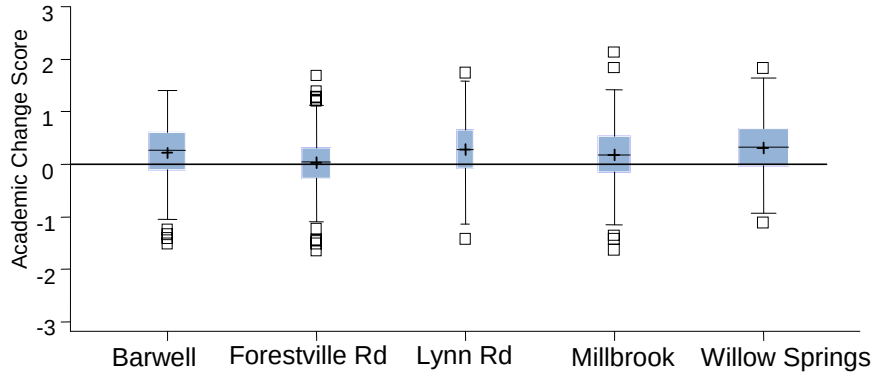
Figure 17
Mathematics EOG Academic Change Score for Elementary School Students Attending 3-Year SIOP® Schools and Matched Schools

3-Year SIOP® Schools



	Brentwood	Durant Rd	Fox Rd	Timber Drive	Wilburn
Min	-1.1	-2.1	-1.1	-1.7	-1.6
Mean	0.25	0.27	0.20	0.22	0.09
Max	2.14	2.32	1.37	1.55	1.53
Std Dev	0.54	0.57	0.46	0.49	0.59
N	111	295	245	245	202

Matched Schools

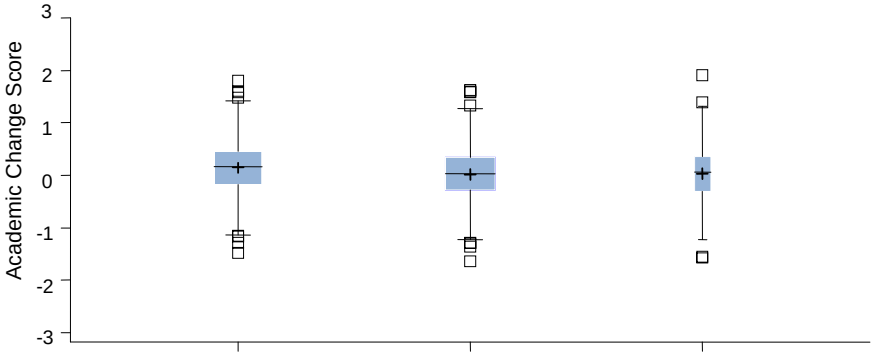


	Barwell	Forestville Rd	Lynn Rd	Millbrook	Willow Springs
Min	-1.5	-1.6	-1.4	-1.6	-1.1
Mean	0.22	0.04	0.28	0.18	0.32
Max	1.41	1.70	1.75	2.14	1.84
Std Dev	0.55	0.52	0.59	0.56	0.51
N	231	201	158	215	279

Note: Box Width varies with N
Data Source: 2010-11 WCPSS End-of-Year Elementary School Student Roster

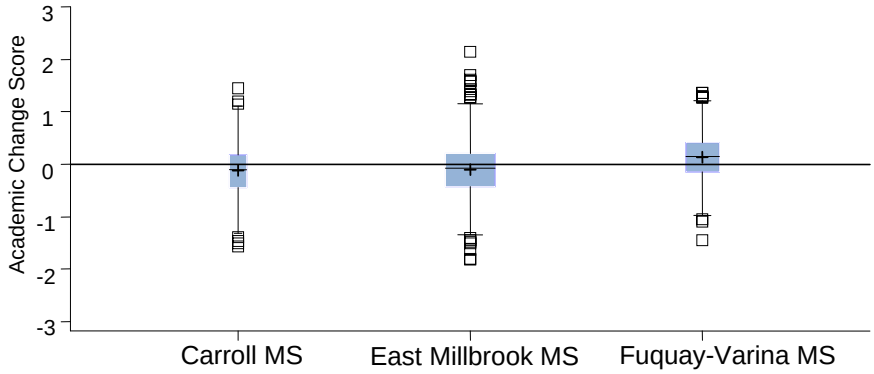
Figure 18
Mathematics EOG Academic Change Score for Middle School Students Attending 3-Year SIOP® Schools and Matched Schools

3-Year SIOP® Schools



	East Wake MS	West Millbrook MS	Zebulon MS
Min	-1.5	-1.6	-1.6
Mean	0.15	0.02	0.04
Max	1.81	1.63	1.91
Std Dev	0.47	0.47	0.49
N	821	832	480

Matched Schools



	Carroll MS	East Millbrook MS	Fuquay-Varina MS
Min	-1.6	-1.8	-1.5
Mean	-.12	-.10	0.14
Max	1.45	2.15	1.37
Std Dev	0.46	0.51	0.44
N	546	990	777

Note: Box Width varies with N
Data Source: 2010-11 WCPSS End-of-Year Middle School Student Roster

Question 4: How did the students in SIOP® targeted schools progress by NCLB subgroups?

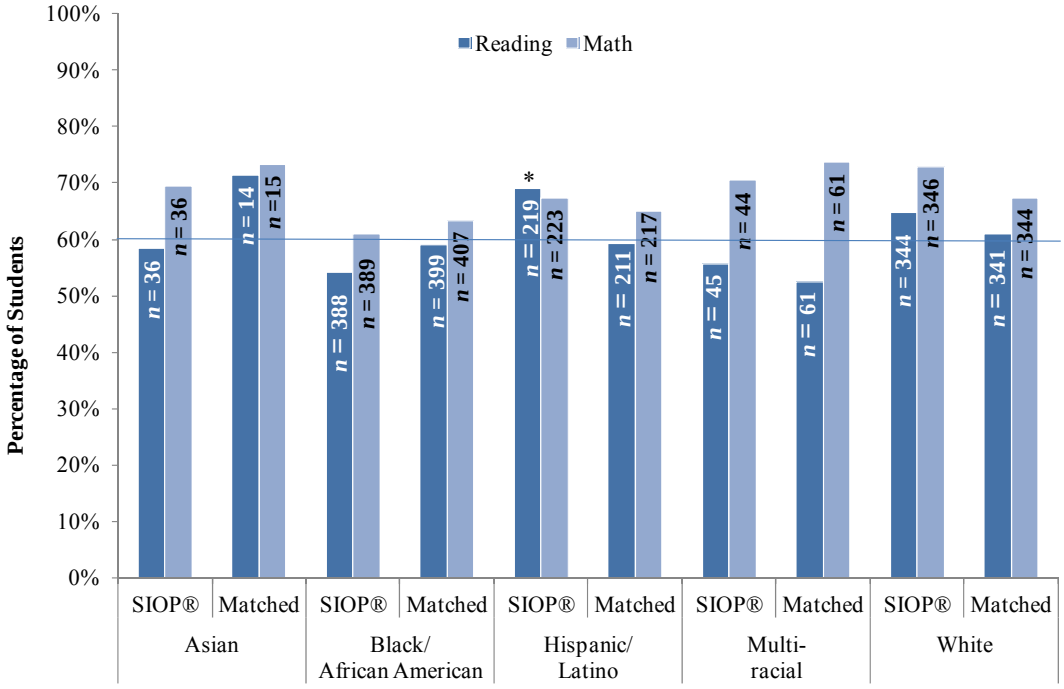
SIOP® targeted schools seemed to benefit Hispanic/Latino elementary school students and Black/African American, ED, and LEP middle school students the most.

At the elementary level, attending SIOP® targeted schools seemed to benefit Hispanic/Latino students in reading the most. At the middle school level, Black/African American and ED students benefited in reading and mathematics while Asian and LEP students benefited in mathematics. Hispanic/Latino participants experienced the most growth, meeting high growth (more than 60% of student having met their growth target) in reading at elementary schools and reading and mathematics at middle schools. Among elementary school students attending SIOP® targeted schools, all racial groups had high growth for mathematics and Hispanic/Latino and White students met high growth in reading.

Growth by NCLB Subgroups

The percentage of students meeting growth was examined in order to assess students' progress by NCLB subgroups. Figure 19 displays the percentage of students attending 3-Year SIOP® and matched elementary schools who met 2010-11 reading and mathematics EOG growth target by racial group.

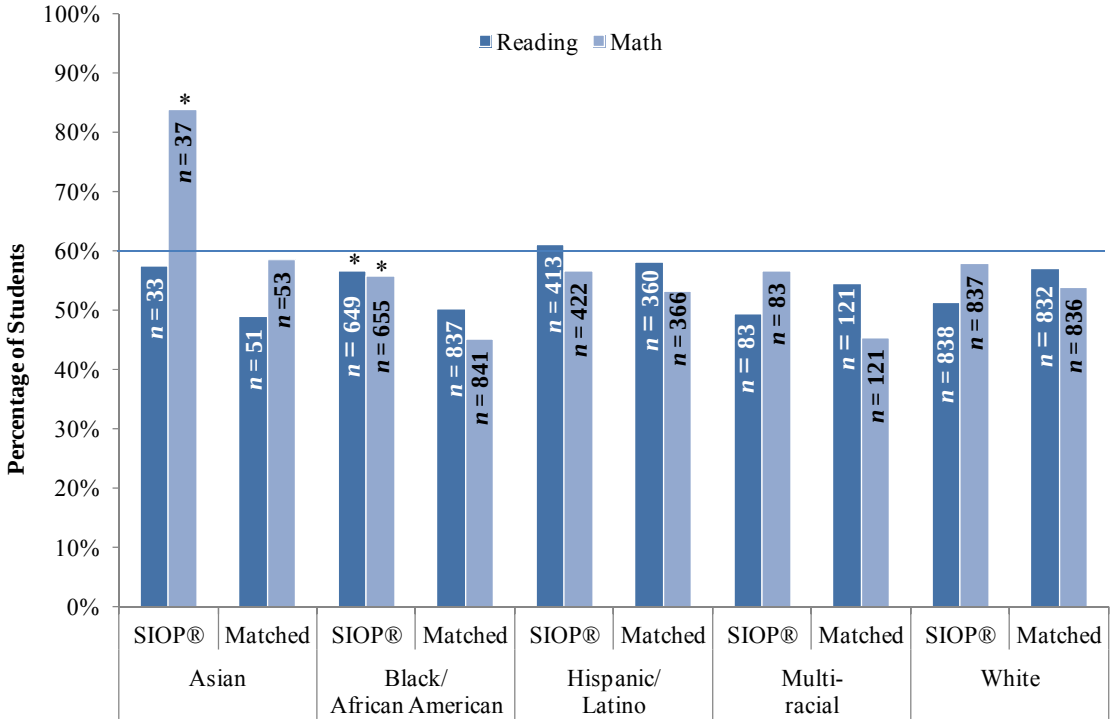
Figure 19
Percentage of Students Meeting 2010-11 EOG Growth Targets by Racial Group at 3-Year SIOP® and Matched Elementary Schools



Note: * indicates a significant difference between 3-Year SIOP® schools and matched schools
Data Source: 2010-11 WCPSS End-of-Year Elementary School Student Roster

Figure 20 displays the percentage of students attending 3-Year SIOP® and matched middle schools who met 2010-11 reading and mathematics EOG growth target by racial group. A significantly higher percentage of Black/African American students met growth targets in reading and mathematics and Asian students met those in mathematics than did matched students. The results for Asian students are based on a small number of students and should therefore be considered cautiously. Although reading results for Hispanic/Latino students were not significantly higher in 3-Year SIOP® schools than for students at matched schools, it should be noted that at 3-Year SIOP® schools this group of students met high growth.

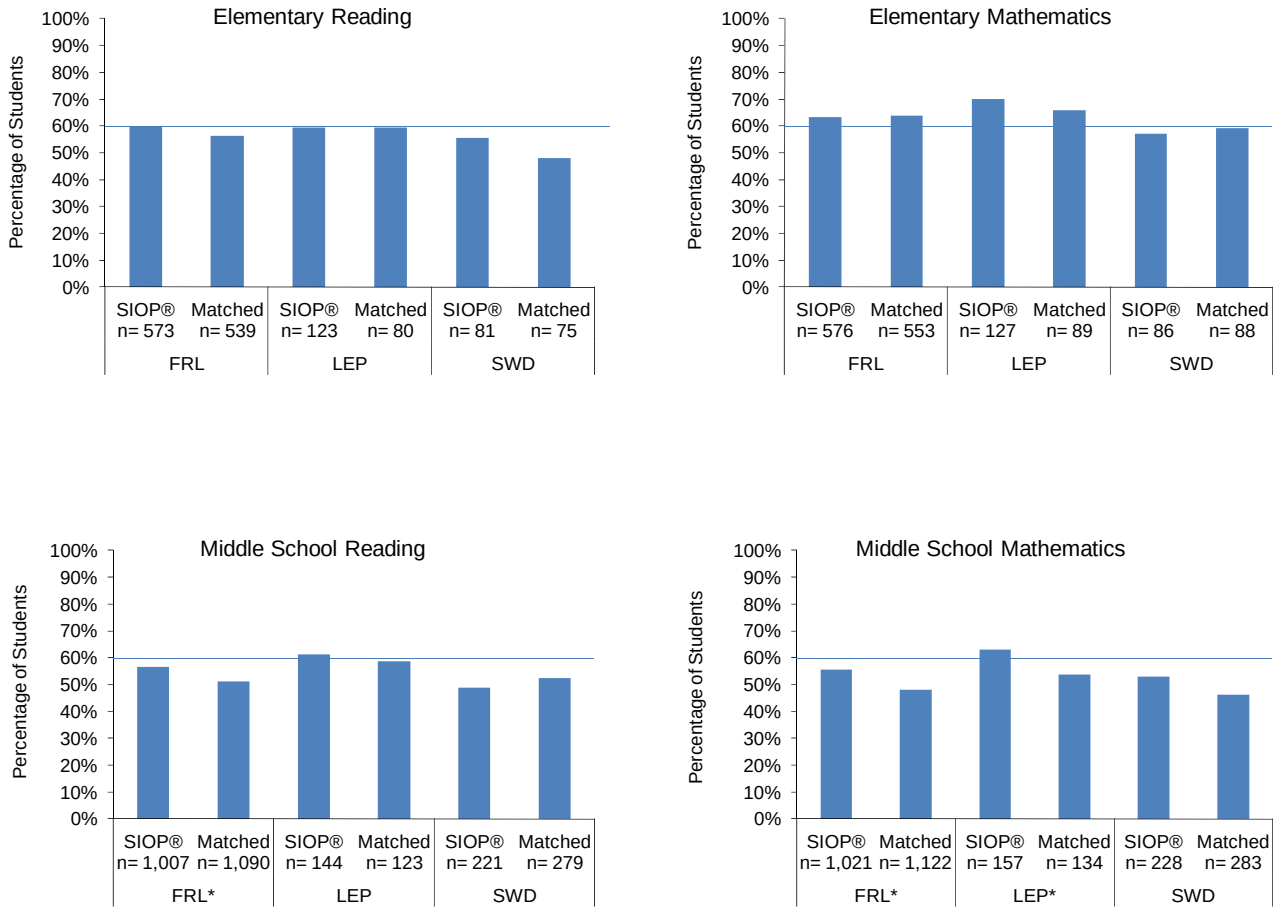
Figure 20
Percentage of Students at 3-Year SIOP® and Matched Middle Schools Meeting 2010-11 EOG Growth Targets by Subject and Racial Group



Note: * indicates a significant difference between 3-Year SIOP® schools and matched schools
Data Source: 2010-11 WCPSS End-of-Year Middle School Student Roster

Figure 21 compares the percentage of students attending 3-Year SIOP® and matched schools who met 2010-11 EOG growth targets by subject and academic risk factor. Among academic risk groups there were no significant differences between the percentage of students who met growth targets at 3-Year SIOP® and matched elementary schools. ED and LEP students attending 3-Year SIOP® and matched elementary schools met high growth in mathematics and were within one percentage point of meeting high growth for reading. Among middle school students attending 3-Year SIOP® schools a significantly higher percentage of ED students met growth in reading and mathematics and LEP students in mathematics than did matched students.

Figure 21
Percentage of Students at 3-Year SIOP® Schools and Matched Schools Meeting 2010-11 EOG Growth Targets by Risk Factor



Note: * indicates 3-Year SIOP® schools had a significantly higher percentage of students meet growth than did matched schools

Data Source: 2010-11 WCPSS End-of-Year Elementary and Middle School Student Rosters

CONCLUSIONS

This report examined 2010-11 overall outcomes related to the SIOP®, the Secondary Literacy Initiative, and the Secondary Mathematics Initiative implemented within WCPSS' District Improvement Plan and a matched school analysis of schools for which 2010-11 represented their third year implementing SIOP®. The four key questions of interest in this evaluation and the findings related to each are presented in Table 8.

Table 8
Summary Analysis of Key Research Questions

Key Questions	Summary of Findings
Have schools targeted for SIOP®, Secondary Literacy, and Secondary Mathematics been effective in terms of outcomes for students (compared to the district overall)?	**SIOP®** At SIOP® targeted elementary schools reading and mathematics proficiency rates were similar to WCPSS overall. However, students attending SIOP® schools experienced greater growth than the district (with the exception of middle school mathematics). Moreover, examinations of the three-year percentage point change by subgroup revealed that for some subgroups the percentage point increase was considerably higher. Among middle school students attending SIOP® targeted schools reading results were positive, with percentage point improvements in proficiency and growth (approximately three percentage points) above that experienced in the district overall. Overall the increase in the percentage of students proficient in mathematics was greater than for the district; however, the percentage of students meeting growth targets was lower than WCPSS. **Secondary Literacy Initiative** Among students attending secondary literacy schools the increase in students proficient in reading was similar to WCPSS while the percentage of students meeting growth increased 7.6 percentage points more than the district. **Secondary Mathematics Initiative** While there was an increase in the percentage of students proficient in mathematics at schools targeted for secondary mathematics, improvements were similar to WCPSS overall and growth was 3.7 percentage points lower than the district.
Did SIOP® targeted schools and teachers with the highest implementation ratings show greater student growth?	In general, schools with higher SIOP® implementation scores also received higher reading and mathematics academic change (growth) scores. Based on the 40 teachers with available EVAAS® and observation data, teachers with high implementation scores (above the mean score or 3.30) had a higher percentage of students making growth, although the percentage did not reach statistical significance.
How did the students in SIOP® targeted schools progress compared to non-targeted (matched schools)?	A significantly higher percentage of students attending SIOP® middle schools were able to move up one or more EOG levels in reading and mathematics between 2009-10 and 2010-11 than did matched students. Furthermore, a significantly higher percentage of students attending SIOP® middle schools met growth in mathematics than did students attending matched schools.
How did the students in SIOP® targeted schools progress by NCLB subgroups?	A significantly higher percentage of Hispanic/Latino students who attended 3-Year SIOP® targeted elementary schools met growth in reading than did students who attended matched schools. Indeed, among elementary school students attending SIOP® targeted schools, all racial groups had high growth for mathematics and Hispanic/Latino and White students met high growth in reading. Among students at 3-Year SIOP® middle schools, a significantly higher percentage of Black/African American and ED met growth in reading and mathematics and a significantly higher percentage of LEP students met growth in mathematics than students at matched schools.

Overall SIOP® reading results were positive. Comparisons to the system showed greater increases in students reaching growth targets in SIOP® schools. In addition, some targeted subgroups improved more than matched students in both elementary and middle schools. Overall SIOP® mathematics results were not as positive as for reading. Matched school analysis, on the other hand, revealed stronger outcome patterns for Black/African American, Asian, ED, and LEP students.

The results for schools implementing the Secondary Literacy and Mathematics Initiatives were not strong; however, given these results represent the first year of implementation they should be used as a baseline for future examinations of student outcomes. The schools implementing the Secondary Literacy and Mathematics Initiatives experienced increases in students proficient in reading and mathematics similar to WCPSS. While schools implementing the Secondary Literacy Initiative experienced increases in growth greater than the district, schools implementing the Secondary Mathematics Initiative experienced growth lower than the district.

Table 9
Summary 2010-11 Achievement Outcomes by District Improvement Initiative

Initiative	School Level	Overall		Matched		
				Overall		NCLB Subgroups Growth
		Proficiency	Growth	Proficiency	Growth	
SIOP® Reading	Elementary	Up slightly more than WCPSS	> than WCPSS	Up but similar to matched	Up but similar to matched	Hispanic students > than matched*
	Middle	> than WCPSS	> than WCPSS	> than matched	Up but similar to matched	Black/African Am and ED students > than matched*
SIOP® Math	Elementary	Up but similar to WCPSS	> than WCPSS	> than matched	Up but similar to matched	No significant difference
	Middle	> than WCPSS	< than WCPSS	> than matched	> than matched *	Black/African Am, Asian, LEP, and ED students > than matched*
Secondary Literacy	Middle/ High	Up but similar to WCPSS	> than WCPSS	N/A	N/A	N/A
Secondary Math	Middle/ High	Up but similar to WCPSS	< than WCPSS	N/A	N/A	N/A

Note: * Indicates significant difference

DISCUSSION

Of the three District Improvement efforts, SIOP® has been in place the longest and has the strongest implementation (Bulgakov-Cooke & Baenen, 2011). Analysis of SIOP® targeted elementary and middle schools achievement trends revealed that increases in proficiency rates between 2008-09 and 2010-11 were either similar to or only slightly higher than those found in WCPSS overall. Analysis of growth revealed larger increases in the percentage of students who met growth attending SIOP® elementary schools for both reading and mathematics and SIOP® middle schools in reading. Thus, overall analysis indicated SIOP® implementation has not yet assisted these schools in closing overall proficiency gaps. However, greater growth (at the elementary school level growth was more than twice that seen within WCPSS overall) reflects improved student achievement which if continued should eventually lead to increased proficiency levels and eroded achievement gaps.

While three-year analysis of student subgroups showed mathematics growth at WCPSS middle schools was down, and even more so for SIOP® middle schools, 2010-11 subgroup analysis of matched schools revealed SIOP® middle schools had a significantly higher percentage of Black/African American, ED, and LEP students meeting growth than did matched schools. Indeed, although comparisons to WCPSS overall were not favorable, matched analysis which examined student achievement by prior EOG level and NCLB subgroups found positive results in mathematics among SIOP® targeted middle schools. Furthermore, the percentage of students meeting growth was significantly higher at SIOP® middle schools than matched schools.

2010-11 represented the first year of implementation of the Secondary Literacy and Secondary Mathematics Initiatives. The implementation study found a small number of teachers were trained in 2010-11 and training varied considerably by school (Bulgakov-Cooke & Baenen, 2011). Initial student outcomes for schools implementing Secondary Literacy were found to be either similar or more positive than the district. Given results for SIOP® schools were more positive than for schools implementing Secondary Literacy, and SIOP® appeared to focus on schools with greater numbers of students in the targeted subgroups, targeting schools with high concentrations of subgroups failing to make AYP at the district level may strengthen the results. Furthermore, the implementation study showed uneven application of secondary mathematics modules; thus, it should not be surprising that student achievement results were either equal or lower than the district (Bulgakov-Cooke & Baenen, 2011). The demographic similarity of schools implementing Secondary Mathematics with WCPSS coupled with the weak results indicates, as with Secondary Literacy, the results of this initiative could be strengthened by more selective process of targeting schools to receive training.

Given that District Improvement efforts were designed to target support to schools with high concentrations of student subgroups which did not make AYP at the district level, the fact that matched school analysis revealed several of these student subgroups (Black/African American, ED, and LEP middle school students) significantly outperformed similar students at matched

schools suggests continuation of SIOP® would benefit these student groups and improve the district's chances of meeting AYP. On the other hand, the AYP standards are so high at this point that training efforts alone may have to be strategically paired with other efforts if AYP is still considered realistically obtainable. The District Improvement Plan and its initiatives have been employed to help WCPSS exit district-wide improvement status. However, the periodic increase of AYP targets as we approach the 100% targets set for 2013-14 has made it increasingly difficult for our system to make AYP and exit district-wide improvement.

RECOMMENDATIONS

The improved growth among schools targeted for support under District Improvement should result in improved proficiency, although this may take time. Based on results from the implementation study and this study's findings, we have the following recommendations:

- ***Select schools with high concentrations of student subgroups not making AYP to receive support implementing SIOP®, Secondary Literacy, and Secondary Mathematics Initiatives.*** Matched school analysis of revealed subgroups of students (ED, LEP, Black/African American, and LEP) performed significantly better than students at matched schools (varying by school level and subject). These student subgroups were among those not making AYP at the district level (also varying by school level and subject). The fact that these student subgroups preformed significantly better at SIOP® schools than at matched schools suggests that the selection of schools with high concentrations of students within the subgroups failing to make AYP may positively impact these subgroups at the district level and has the potential to decrease achievement gaps. Moreover, given results for SIOP® schools were more positive than for schools implementing Secondary Literacy and Secondary mathematics and schools implementing Secondary Literacy and Secondary Mathematics were demographically similar to the district, schools with high concentrations of student subgroups not making AYP should be targeted to receive support implementing these initiatives.

- ***Expand and provide consistent training for the Secondary Literacy Initiative.*** Initial student outcomes were either similar or more positive than the district. The implementation study found a small number of teachers were trained in 2010-11 and training varied considerably by school; thus, consistency should be improved and training expanded.

- ***Implement the Secondary Mathematics Initiative more consistently and on a larger scale.*** The implementation study showed uneven application of secondary mathematics modules and student achievement results were either equal or lower than the district. Therefore, the implementation of this initiative should first be strengthened by more consistent application of modules and outcomes reevaluated.

- ***Reexamine student outcomes for the Secondary Literacy and Secondary Mathematics Initiatives.*** 2010-11 represented the first year of implementation of these initiatives. Evaluation of student outcomes at the end of the first year of implementation can be premature. We were also not able to analyze results just for students in the classes of trained teachers, which would have been a more precise measure of impact. Thus, the outcome data presented in this report, while informative, should be considered as an initial baseline and further examination of student outcomes should be conducted over time. This will require tighter data collection on teachers and students directly impacted by the initiative. By the end of 2011-12, an increase in proficiency and AYP results is expected by the initiatives.

The status of NCLB reauthorization and waivers should be watched closely because it will have a major impact on our District Improvement efforts. Student results for 2011-12 will help determine what we will decide to continue if we are no longer required to set aside a certain percentage of District Improvement funds for professional development.

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